UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/668,938	09/25/2000	Volker Rasche	PHD99.130US	2720

24737 7590 06/03/2003

PHILIPS ELECTRONICS NORTH AMERICAN CORP
580 WHITE PLAINS RD
TARRYTOWN, NY 10591

EXAMINER
KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/668,938	Applicant(s) RASCHE ET AL.	
	Examiner Chih-Cheng Glen Kao	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) *1-10 and 12-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-21* is/are rejected.

7)☒ Claim(s) *1,7,12,17,18 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 1, 7, 12, 17, 18, and 20 are objected to because of lack of antecedent problems that appear to be draft errors: (claim 1, line 8, "the periodic motion"), (claim 1, line 12, "the formation"), (claim 1, line 16, "the movement"), (claim 7, line 3, "the heart"), (claim 12, line 4, "the formation"), (claim 12, line 5, "the body"), (claim 12, line 7, "the periodic motion"), (claim 17, line 4, "the diaphragm"), (claim 18, line 7, "the periodic motion"), (claim 18, line 14, "the movement"), (claim 18, line 18, "the formation"), (claim 20, line 3, "the presence").

The objections may be obviated by the following corrections: (claim 1, line 8, deleting "the"), (claim 1, line 12, deleting "the"), (claim 1, line 16, deleting "the"), (claim 7, line 3, after "heart", inserting - -of the patient- -), (claim 12, line 4, deleting "the"), (claim 12, line 5, replacing "the" with - -a- -), (claim 12, line 7, deleting "the"), (claim 17, line 4, after "diaphragm", inserting - -of the patient- -), (claim 18, line 7, deleting "the"), (claim 18, line 14, deleting "the"), (claim 18, line 18, deleting "the"), (claim 20, line 3, deleting "the").

For purposes of examination, the claim has been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 7, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshitome (US Patent 5,751,782) in view of Fujita (US Patent 5482042), Neal et al. (US Patent 4075489), and Takagi et al. (US Patent 6470066).

3. With regards to claim 1 and 12, Yoshitome discloses a method and device comprising:, defining a plurality of different positions of an x-ray device (Fig. 3, "Measuring angle") comprising an x-ray source (Fig. 1, #11) and an x-ray detector (Fig. 1, #13), means for detecting a motion signal of a body organ including a low-motion phase (Fig. 3, (a)), a processing and control unit for simultaneously with detection of the motion signal, moving the x-ray device to the x-ray positions (Fig. 3, "Measuring" angle") and acquiring a plurality of projection data sets in a respective one of the x-ray positions (Fig. 3, e1, e2, and e3), controlling movement of the x-ray device and acquisition of data sets such that a projection data set during a low-motion phase is acquired when the x-ray device is in each x-ray position (Fig. 3, e1 at different measuring angles), and using the projection data sets during low-motion phases for formation of an image (col. 9, lines 50-56).

However, Yoshitome does not disclose acquiring a three-dimensional image nor defining a plurality of different x-ray positions in a common plane to obtain three-dimensional image data.

Fujita teaches acquiring a three-dimensional image (col. 1, lines 35-39). Neal et al. teaches defining a plurality of different x-ray positions in a common plane (col. 1, lines 14-21). Takagi et al. teaches common planes to obtain three-dimensional image data (col. 5, lines 1-10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the three-dimensional image of Fujita with the method and device of Yoshitome, since one would be motivated to look at a three-dimensional image to obtain more information from the image compared to a two-dimensional image as implied from Fujita (col. 1, lines 36-39).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have x-ray positions in a common plane of Neal et al. with the method and device of Yoshitome, since one would be motivated to use this to obtain information for medical diagnosis as implied from Neal et al. (col. 1, lines 10-21).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have common planes to obtain three-dimensional data of Takagi et al. with the method and device of Yoshitome, since one would be motivated to use data to see more information simultaneously as implied from Takagi et al. (Fig. 3).

4. With regards to claim 2, Yoshitome further discloses wherein only projection data sets acquired during the same motion phases are selected and used (Fig. 3, e1, e2, and e3).

5. With regards to claim 3, Yoshitome in view of Fujita, Neal et al., and Takagi et al. suggests a method as recited above. Yoshitome further discloses successively moving the x-ray device to all x-ray positions, completing a plurality of cycles (Fig. 3).

However, Yoshitome does not disclose controlling the x-ray device by means of the motion signal so that each cycle commences in a different phase of motion in this embodiment.

Yoshitome further discloses controlling the x-ray device by means of the motion signal so that each cycle commences in a different phase of motion of the body organ (Fig. 4) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have each cycle commence in a different phase of Yoshitome with the suggested method of Yoshitome in view of Fujita, Neal et al., and Takagi et al., since one would be motivated to commence cycles at different phases in order to obtain the measurements needed at different measuring angles as implied from Yoshitome (col. 1, lines 24-34).

6. With regards to claim 4, Yoshitome in view of Fujita, Neal et al., and Takagi et al. suggests a method as recited above.

However, Yoshitome does not disclose wherein the x-ray device is controlled such that projection data is acquired only during low-motion phases in this embodiment.

Yoshitome further discloses wherein the x-ray device is controlled such that projection data is acquired only during low-motion phases (Fig. 2, e) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have only low-motion phases acquired of Yoshitome with the suggested

method of Yoshitome in view of Fujita, Neal et al., and Takagi et al., since one would be motivated to do this for obtaining data only during one phase of the organ as implied from Yoshitome (col. 7, lines 17-26).

7. With regards to claim 5, Yoshitome in view of Fujita, Neal et al., and Takagi et al. suggests a method as recited above.

However, Yoshitome does not disclose wherein the x-ray device is on exclusively during low-motion phases of the body organ in this embodiment.

Yoshitome further discloses wherein the x-ray device is on exclusively during low-motion phases of the body organ (col. 7, lines 48-51) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the device on only during low-motion phases of Yoshitome with the suggested method of Yoshitome in view of Fujita, Neal et al., and Takagi et al., since one would be motivated to do this for obtaining data only during one phase of the organ as implied from Yoshitome (col. 7, lines 17-26).

8. With regards to claims 7 and 13, Yoshitome further discloses a cardiac motion signal (Fig. 3, (a)).

9. With regards to claim 14, Yoshitome further discloses mean for measuring with one of an electrocardiography device and a pulse oxymetry device (Fig. 1, #16)

10. Claims 6, 8-10, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshitome in view of Fujita, Neal et al., and Takagi et al. and as applied to claims 1, 7, and 12 above, and further in view of Van Horn et al. (US Patent 3,871,360).

11. Regarding claims 6 and 15, Yoshitome in view of Fujita, Neal et al., and Takagi et al. suggest a method and device as recited above.

However, Yoshitome does not disclose a respiratory motion signal

Van Horn et al. teaches a respiratory motion signal (col. 1, lines 24-30 and 43-53)

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the respiratory motion signal of Van Horn et al. with the suggested method and device of Yoshitome in view of Fujita, Neal et al., and Takagi et al., since one would be motivated use this to obtain images or measurements that are not blurred by lung motion as implied from Van Horn et al. (col. 1, lines 24-29).

12. Regarding claim 8, Yoshitome in view of Fujita, Neal et al., and Takagi et al. suggest a method and device as recited above.

However, Yoshitome does not disclose a respiratory motion signal to get projection data sets during the same respiratory motion phase.

Van Horn et al. teaches a respiratory motion signal to get projection data sets during the same respiratory motion phases (col. 1, lines 24-30 and 43-53).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to get the same respiratory motion phase of Van Horn et al. with the

suggested method of Yoshitome in view of Fujita, Neal et al., and Takagi et al., since one would be motivated use this to obtain images or measurements that are not blurred by heart or lung motion as implied from Van Horn et al. (col. 1, lines 24-29).

13. Regarding claim 9, Yoshitome in view of Fujita, Neal et al., Takagi et al., and Van Horn et al., suggest a method as recited above.

However, Yoshitome does not disclose a respiratory motion signal to correct data acquired in different respiratory motion phases.

Van Horn et al. teaches a respiratory motion signal (col. 1, lines 24-30 and 43-53) to correct data acquired in different respiratory motion phases (col. 5, lines 48-54).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the correction data of Van Horn et al. with the suggested method and device of Yoshitome in view of Fujita, Neal et al., Takagi et al., and Van Horn et al., since one would be motivated use this to obtain images or measurements that are not blurred by lung motion as implied from Van Horn et al. (col. 1, lines 24-29).

14. Regarding claims 10 and 16, Yoshitome in view of Fujita, Neal et al., Takagi et al., and Van Horn et al. suggests a method and device as recited above.

However, Yoshitome does not disclose further informing the patient with a device that a desired respiratory motion phase has been reached based on the respiratory motion signal.

Fujita further teaches further informing the patient with a device that a desired respiratory motion phase has been reached based on the respiratory motion signal (col. 5, lines 52-65, and Fig. 2).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the respiratory signal for the patient of Fujita with the suggested method and device of Yoshitome in view of Fujita, Neal et al., Takagi et al., and Van Horn et al., since one would be motivated to have better user control for respiration to time data acquisition relative to breathing as shown by Fujita (col. 7, lines 33-67 and col. 8, lines 1-2).

15. Regarding claim 17, Yoshitome in view of Fujita, Neal et al., Takagi et al., and Van Horn et al. suggest a device as recited above.

However, Yoshitome does not disclose detection with one of an ultrasound device, an abdominal belt for measuring the motion of the diaphragm, and a resistance measuring device for measuring the resistance of the abdominal region of the patient.

Van Horn et al. teaches detection with one of an ultrasound device, an abdominal belt for measuring the motion of the diaphragm, and a resistance measuring device for measuring the resistance of the abdominal region of the patient (col. 2, lines 51-69).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the detector of Van Horn et al. with the suggested device of Yoshitome in view of Fujita, Neal et al, Takagi et al., and Van Horn et al., since one would be motivated incorporate this to obtain images or measurements that are not blurred by lung motion as implied from Van Horn et al. (col. 1, lines 24-29).

16. Claims 18-21 are rejected under 35 U.S.C. 103(a) Fujita in view of Yoshitome, Neal et al., and Takagi et al.

17. With regards to claim 18, Fujita discloses a method for acquiring a three-dimensional image (col. 1, lines 35-39) comprising the steps of: defining a plurality of different positions of an x-ray device (col. 6, lines 43-48), detecting a motion signal of a body organ including a low-motion phase (col. 5, lines 50-67), simultaneously with detection of the motion signal, moving the x-ray device to the x-ray positions and determining whether a low-motion phase of the notion signal is present and if so acquiring a projection data set (col. 5, lines 52-67), continuing movement of the device to all positions until a data set is acquired when the device is in each position (col. 6, lines 1-10), and using the data during low-motion phases to form the three dimensional image set (col. 1, lines 35-39).

However, Fujita does not disclose a source and detector nor defining a plurality of different x-ray positions in a common plane to obtain three-dimensional image data.

Yoshitome teaches a source and detector (Fig. 1, #11 and 13). Neal et al. teaches defining a plurality of different x-ray positions in a common plane (col. 1, lines 14-21). Takagi et al. teaches common planes to obtain three-dimensional image data (col. 5, lines 1-10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have source and detector of Yoshitome with the method of Fujita, since one would be motivated to include a source and detector to use for creating images as implied from Yoshitome (Abstract, lines 1-5).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have x-ray positions in a common plane of Neal et al. with the method of Fujita, since one would be motivated to use this to obtain information for medical diagnosis as implied from Neal et al. (col. 1, lines 10-21).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have common planes to obtain three-dimensional data of Takagi et al. with the method of Fujita, since one would be motivated to use data to see more information simultaneously as implied from Takagi et al. (Fig. 3).

18. With regards to claim 19, Fujita further discloses maintaining the device in each position when the low-motion phase is not present and continuously determining whether the low-motion phase is present until positive determination is obtained and thereafter acquiring projection data and them moving the device to another x-ray position (col. 6, lines 10-44, and corresponding figure).

19. With regards to claim 20, Fujita further discloses correlating the presence of the device in each positions and the acquisition of eat projection set based on the motion signal such that the device is present in a new x-ray position at a fixed instant within a given phase of motion (col. 5, lines 50-67) and acquiring at the same time a correction data set so all projection data sets are acquired at the same instant within a phase of motion (col. 6, lines 10-44).

20. With regards to claim 21, Fujita further discloses defining a sequence of positions and moving the x-ray device through each of the positions in the sequence (col. 6, lines 44-48).

Response to Arguments

21. The objections to the claims made in the Office Action mailed 12/18/02 have been withdrawn in light of the Amendment filed 2/20/03.

22. Applicant's arguments with respect to claims 1-10 and 12-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

gk
May 25, 2003

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800